

A Review of the Mexican and Central American species of *Strangalia* Audinet-Serville (Coleoptera: Cerambycidae)

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Abstract: The Mexican and Central American species of the lepturine genus *Strangalia* are reviewed. All known species are characterized and new distributional records listed. New synonymy is presented and the following new species described: *Strangalia doyen*i (Mexico); *S. montivaga* (Mexico); *S. opler*i (Costa Rica); and *S. westcott*i (Mexico). A key to the Mexican and Central American species of *Strangalia* is provided.

Since the descriptions by Bates (1869, 1872, 1880–1885) of new Central American and Mexican species of *Ophistomis*, there have been relatively few additions to our knowledge of this group. Linsley (1935a,b) proposed names for two species, one each from Mexico and British Honduras, and Chemsak (1969) described seven new species from Mexico and Guatemala (as *Strangalia*). In 1971, Linsley and Chemsak redescribed all of the Mexican and Central American species named by Bates and reassigned them from *Ophistomis* Thomson to *Strangalia* Audinet-Serville.

Most of the species are poorly represented in collections and we have seen less than 200 specimens excluding the Biologia Centrali-Americana material at the British Museum (Natural History). All species are diurnal flower visitors and most appear to be mimics of Ichneumonoidea or other Hymenoptera. There is a pronounced sexual dimorphism and most males have highly modified secondary sexual characters. In some cases sexual dichromatism is so extreme that the two sexes have been named as separate species.

The genus *Strangalia* may be recognized as follows: Head oblique, abruptly and deeply constricted behind eyes, tempora indistinct, front rather short, palpi unequal; eyes large, finely faceted, notched; antennae inserted on front at anterior margin of eyes, outer segments usually slightly thickened, poriferous areas usually present on distal segments, third segment longer than scape, fourth shorter than third, fifth longer than fourth. Pronotum as long as or longer than basal width, hind angles acute, usually not expanded over humeri; sides sinuate; apex narrowly impressed; prosternum shallowly excavated. Elytra

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usually strongly cuneiform, sides narrowing near middle; apices acuminate to obliquely truncate. Legs slender; hind femora carinate dorsally toward base; hind tibiae often carinate internally in males; posterior tarsi slender, elongate, apical segment slender, cleft only at apex. Abdomen of males with last sternite usually deeply excavated and margins expanded, females with last sternite usually shallowly impressed at apex.

Key to the Known Species of Mexican and Central American *Strangalia*

1. Abdomen with last ventral segment elongate, usually deeply excavated with elevated margins or shallowly excavated for part of the length; antennae usually with well developed poriferous areas; body slender, strongly tapering; hind tibiae often carinate along inner margin—Males 2
 Abdomen with last ventral segment only slightly longer than fourth, shallowly impressed at apex; antennae with poorly developed poriferous areas; body more robust, less tapering; tibiae never carinate—Females 18
- 2(1). Posterior tibiae without distinct carinae 3
 Posterior tibiae carinate, at least apically along inside edge from base of inner spur 6
- 3(2). Abdomen with last ventral segment excavated for its entire length 4
 Abdomen with last ventral segment excavated for $\frac{1}{2}$ or $\frac{2}{3}$ its length 5
- 4(3). Antennae with very small poriferous areas; elytra brownish with narrowly black lateral and sutural margins and a small black spot on each side at middle. Length, 16–18mm. Sinaloa, Mexico *gracilis*
 Antennae with well developed poriferous areas, segments from seventh with a double row; integument black, elytra usually with two yellowish vittae. Length, 22m. Vera Pax, Guatemala *lachrymans*
- 5(3). Pronotum densely clothed with short, appressed, golden pubescence; elytra all black or with base orange; abdomen with last ventral segment excavated for $\frac{1}{2}$ the length. Length, 16mm. Durango, Mexico *auripilis*
 Pronotum very sparsely pubescent; elytra yellowish with dark lateral margins expanding into spots; Abdomen with last ventral segment excavated for $\frac{2}{3}$ the length. 10–13mm. Mexico, Guatemala and British Honduras *pectoralis*
- 6(2). Abdomen with last ventral segment not excavated, sides not expanded 7
 Abdomen with last ventral segment excavated, sides expanded to varying degrees 9
- 7(6). Posterior tibiae with a broad plate at apex; metasternum with two tubercles 8
 Posterior tibiae lacking a broad plate at apex; metasternum without tubercles; integument orange and black, elytra narrowly black apically. Length, 13–18mm. Mexico to Oaxaca, Mexico *biannulata*
- 8(7). Posterior tibiae arcuate, apex with a single spine in addition to the broad plate; integument orange and black, elytra usually unicolorous orange. Length, 15–18mm. Sinaloa, Mexico *palaspina*
 Posterior tibiae straight, apex with two spines in addition to the broad plate; integument testaceous and black, elytra narrowly black along sutural and lateral margins. Length, 17–19 mm. Costa Rica *opleri*

- 9(6). Pronotum very sparsely punctate, punctures scattered 10
 Pronotum densely punctate, punctures usually contiguous 12
- 10(9). Abdomen with last ventral segment narrowly excavated, expanded sides acute
 at apex, margins of sternites crenulated; elytra testaceous with black spots 11
 Abdomen with last ventral segment broadly excavated, expanded sides rounded
 at apex, margins of sternites simple; elytra black. Length, 14–18mm.
 Veracruz, Mexico to British Honduras *brachialis*
- 11(10). Abdomen with apex of last tergite emarginate, angles not spinose. Length,
 14–16mm. Panama *saltator*
 Abdomen with apex of last tergite notched, angles spinose. Length, 16–17.5mm.
 Nicaragua to Panama *picticornis*
- 12(9). Abdomen with last ventral segment very broadly expanded at sides, densely
 pubescent, fourth segment impressed at apex 13
 Abdomen with last ventral segment moderately expanded at sides, expansion not
 encompassing entire segment, glabrous, fourth segment not impressed at apex 14
- 13(12). Abdomen with last sternite strongly longitudinally carinate medially, fourth
 sternite shallowly impressed at apex; integument all black or elytra with
 broad, testaceous longitudinal vittae. Length, 20–23mm. Oaxaca, Mexico
 *cavaventra*
 Abdomen with last sternite not carinate, fourth sternite deeply impressed over
 apical $\frac{1}{3}$; integument reddish and testaceous, elytra with vague darker spots.
 Length, 20–25mm. Oaxaca, Mexico *doyeni*
- 14(12). Pronotum reddish 15
 Pronotum black 16
- 15(14). Antennae black except for extreme apex; abdomen with last ventral segment
 excavated for its entire length; elytra black with narrowly reddish base.
 Length, 20–22mm. Sinaloa, Mexico *bicolorella*
 Antennae with segments 5–7 all or partially black; abdomen with last ventral
 segment not excavated for its entire length; elytra black with small pale spots.
 Length, 19mm. Nayarit, Mexico *westcotti*
- 16(14). Posterior tibiae curved and expanded near apex; abdomen with last tergite
 fringed at apex 17
 Posterior tibiae not curved or expanded near apex; abdomen with last tergite
 not fringed at apex; integument black, antennae with last three segments
 yellow. Length, 14–16mm. Guerrero, Mexico *xanthotelas*
- 17(16). Abdomen with last tergite emarginate at apex; elytra broadly testaceous with
 black margins. Length, 19mm. Chiapas, Mexico to Guatemala *dolicops*
 Abdomen with last tergite rounded at apex; elytra black. Length, 16–17mm.
 Guatemala *melampus*
- 18(1). Antennae all black 19
 Antennae variously bi- or tricolored 27
- 19(18). Elytra with pattern consisting of distinct black spots 20
 Elytra unicolorous or vittate or with apex only dark 22

- 20(19). Pronotum densely punctate; elytra moderately densely punctate 21
 Pronotum very sparsely punctate; elytra sparsely punctate, punctures very
 widely separated; integument yellowish and black, elytra with three black
 spots and dark apices. Length, 14mm. Panama *saltator*
- 21(20). Pronotum reddish at sides with a broad median black longitudinal band; elytra
 with black spots extending out from lateral margins. Length, 10-13mm.
 Mexico, Guatemala, British Honduras *pectoralis*
 Pronotum yellow with a black longitudinal band on each side of middle; elytra
 with basal dark band extending back over humeri, other black spots not
 extensions of lateral dark band. Length, 18mm. Nicaragua *belti*
- 22(19). Elytra black, unicolorous or with pale longitudinal vittae 23
 Elytra orange or reddish, often with longitudinal black vittae 25
- 23(22). Elytra with pale vittae 24
 Elytra unicolorous black; pronotum often reddish, very sparsely punctate.
 Length, 13-19mm. Mexico and British Honduras *brachialis*
- 24(23). Abdomen with last tergite shallowly notched at apex; pronotum as long as basal
 width; elytra with two, narrow testaceous vittae extending almost to apex.
 Length, 13-18mm. Durango and Sinaloa, Mexico *montivaga*
 Abdomen with last tergite deeply emarginate, angles produced into obtuse
 spines; pronotum longer than basal width; elytra with two yellowish, longi-
 tudinal vittae. Length, 15-17mm. Oaxaca, Mexico *cavaventra*
- 25(22). Head orange or with only vertex black; pronotum orange 26
 Head completely black; pronotum black or with a median pale stripe; elytra
 brownish to reddish, often with a narrow dark sutural vitta and dark lateral
 vittae over apical one-half. Length, 15-18mm. Costa Rica *opleri*
- 26(25). Head with vertex black; pronotum with dark pubescence at middle; scutellum
 black; elytra usually black vittate along suture and lateral margins. Length,
 16-18mm. Mexico to Oaxaca, Mexico *biannulata*
 Head with vertex orange; pronotum gold pubescent at middle; scutellum pale;
 elytra concolorous orange or black vittate along suture and lateral margins.
 Length, 13-16mm. Sinaloa, Mexico *palaspina*
- 27(18). Antennae with basal segments concolorous black or pale 28
 Antennae with basal segments orange annulated with black at apices; pronotum
 densely clothed with golden appressed pubescence; elytra orange or black or
 a combination of both. Length, 14mm. Durango, Mexico *auripilis*
- 28(27). Antennae with basal segments orange or yellowish 29
 Antennae with basal segments black 30
- 29(28). Pronotum distinctly shining, very sparsely pubescent; elytra with punctures on
 basal black chevron separated, not asperate, sides behind middle gradually
 tapering. Length, 16-18mm. Sinaloa and Colima, Mexico *bicolorella*
 Pronotum dull, moderately densely pubescent, elytra with punctures on basal
 black chevron contiguous, asperate, sides behind middle abruptly tapered.
 Length, 18-20mm. Nayarit and Oaxaca *doyeni*
- 30(28). Antennae with apical segments black 31
 Antennae with apical segments pale 32

- 31(30). Pronotum with two longitudinal black vittae; elytra with black spots. Length, 18mm. Nicaragua *belti*
 Pronotum concolorous, lacking vittae; elytra with black sutural and lateral stripes. Length, 16-18mm. Mexico to Oaxaca, Mexico *biannulata*
- 32(30). Elytra at least bicolored 33
 Elytra concolorous black; abdomen with last tergite deeply emarginate at apex. Length, 12mm. Guerrero, Mexico *xanthotelas*
- 33(32). Elytra with definite rounded black spots; pronotal vittae, if present, longitudinal 34
 Elytra with oblique black bands which enclose paler areas; pronotal vittae oblique. Length, 15-17mm. Guatemala *melampus*
- 34(33). Pronotum bicolored; elytra with more than one pair of black spots 35
 Pronotum concolorous black; elytra with a single median pair of black spots; legs pale. Length, 12mm. Sinaloa, Mexico *gracilis*
- 35(34). Abdomen with last tergite emarginate at apex; pronotum with two black vittae .. 36
 Abdomen with last tergite rounded at apex; pronotum mostly black, not vittate; elytra with black spots arising from marginal stripes. Length, 14mm. Costa Rica *emaciata*
- 36(35). Pronotum distinctly densely punctate; elytra densely to moderately densely punctate 37
 Pronotum very sparsely punctate; elytra sparsely punctate with a short suberect seta arising from each puncture. Length, 15-20mm. Nicaragua to Panama *picticornis*
- 37(36). Abdomen with last tergite bilobed at apex, last ventral segment spinose at apex; elytra shining, separately punctate at base. Length, 18mm. Nicaragua *belti*
 Abdomen with last tergite emarginate at apex, last ventral segment not spinose at apex; elytra dull, basal punctures contiguous. Length, 18mm. Mexico .. *sallaei*

Strangalia auripilis Chemsak

Strangalia auripilis Chemsak, 1969, Jour. New York Entomol. Soc., 77:6, fig. 5; Linsley and Chemsak, 1971, Arq. Zool., 21:24.

Male: Color black and orange, variable, elytra often with base orange, antennae orange and black basally, legs bicolored, pubescence mostly golden. Antennae with small poriferous areas. Hind tibiae not carinate. Abdomen with last sternite excavated for about half its length, margins moderately produced, narrowly elongating at apex. Length, 16 mm.

Female: Form more robust. Abdomen with apex of last sternite impressed at middle giving a scalloped appearance. Length, 14 mm.

Type locality: 24 miles W La Ciudad, Durango, Mexico.

Known only from the type series collected in July. Considerable variation is expressed in the coloration. The coloration of the elytra may be wholly black or orange or a combination of the two. The coloration of the legs and under surface is also variable.

Strangalia belti (Bates)

Ophistomis belti Bates, 1872, Trans. Entomol. Soc. London, 1872:182; Bates, 1880, Biologia Centrali-Americana, Coleoptera, 5:39, pl. 4, fig. 22.

Strangalia belti; Linsley and Chemsak, 1971, Arq. Zool., 21:24.

Female: Form moderately robust, elytra attenuated; color yellowish orange, parts of head, antennae at least basally, two pronotal stripes, parts of legs and underside black, elytra with black humeral bands, two median spots, a post median stripe and apices narrowly, suture black to about middle. Pronotum moderately densely, irregularly punctate, median lines glabrous; pubescence moderately dense, rather long, subdepressed. Abdomen almost impunctate; last sternite impressed at apex; angles spinose; last tergite bilobed at apex. Length, 18 mm.

Male: Unknown.

Type locality: Chontales, Nicaragua.

This species is distinctive from others with similar coloration by the punctate and pubescent pronotum and by the shape of the last abdominal tergite. It is presently known only from the type.

Strangalia biannulata (Linsley)

Ophistomis biannulatus Linsley, 1935, Trans. Amer. Entomol. Soc., 61:83.

Strangalia biannulata; Linsley and Chemsak, 1971, Arq. Zool., 21:25.

Male: Form slender, tapering; color orange with parts of head, elytra, underside, legs, and antennae black. Antennae with well defined poriferous areas. Pronotum with short, depressed, dark pubescence on disk. Legs with hind tibiae with a small tubercle at inside before apex. Abdomen with last sternite elongate, very shallowly impressed at apex, sides not inflated. Length, 13–18 mm.

Female: Form a little more robust. Abdomen with last sternite irregularly truncate at apex, shallowly impressed at middle. Length, 16–18 mm.

Type locality: Bejucos, Temescaltepec, Mexico, Mexico.

Color variation is considerable especially in the elytra. These range from orange with black apices to longitudinally black vittate to all black with orange humeri and basal margin.

In addition to the type series, the following specimens, all from Mexico have been examined: 1 ♀, 20 miles E El Camaron, Oaxaca, 21 July 1956 (J. W. MacSwain); 2 ♀ ♀, 14 miles NW Tehuantepec, Oaxaca, 26 June 1961, on flowers of *Croton* (U. Kans. Mex. Exped.); 3 ♂ ♂, 3 ♀ ♀, 30 miles NE Tehuantepec, 8 July 1955 (D. Giuliani); 1 ♀, 16 mi N Juchitan, Oaxaca, 2 July 1955 (R. Beer and party); 1 ♂, 6 miles S Rio Mexcala, Hwy. 95, Guerrero, 6 August 1965 (G. H. Nelson); 1 ♀, 15 miles S Iguala, Guerrero, 10 July 1966 (P. M. & P. K. Wagner); 1 ♂, Cuernavaca, Morelos, 29 July 1961 (R. & K. Dreisbach).

Strangalia bicolorella Chemsak

Strangalia bicolorella Chemsak, 1969, Jour. New York Entomol. Soc., 77:2, fig. 1; Linsley and Chemsak, 1971, Arq. Zool., 21:24.

Strangalia pulchra Chemsak, 1969, Jour. New York Entomol. Soc., 77:5, fig. 4; Linsley and Chemsak, 1971, Arq. Zool., 21:24. New synonymy.

Male: Color reddish orange except for the following black parts: tips of mandibles and maxillary palpi, eyes, antennae except scape, elytra except for basal margin, apex of abdomen, tibiae and tarsi and apical halves of hind femora. Antennae with distinct poriferous areas on distal segments. Elytra strongly acuminate; punctures rather fine, separated. Legs with

hind tibiae carinate internally. Abdomen with last ventral segment excavated for its entire length, margins strongly expanded. Length 20–22 mm.

Female: Form strongly tapering posteriorly; color reddish, elytra yellowish and brown with black fasciae, antennae reddish basally, segments six and seven dark, remaining segments yellow, underside variably partially black. Abdomen with last sternite medially impressed at apex, apical margin uneven, sides subdentate. Length, 16–18 mm.

Type locality: of *bicolorella*, *pulchra*, 5 miles N of Mazatlan, Sinaloa, Mexico.

This species is strongly sexually dichromatic and the above synonymy was determined only by collecting mating pairs.

In addition to the type series, material examined from Mexico includes: 2 ♂♂, 2 ♀♀, 2.5 miles N Mazatlan, 10–11 August 1970, on flowers of *Buddleia wrightii* (J. A. Chemsak); 1 ♀, La Audiencia, 7 miles NW Manzanillo, Colima, 25 August 1970 (C. E. and D. E. Wasbauer); 1 ♂, 1 ♀, 5 miles N Mazatlan, 31 July 1972, on *B. wrightii* (J. and M. A. Chemsak, A. and M. Michelbacher).

Strangalia brachialis (Bates)

Ophistomis brachialis Bates, 1885, Biologia Centrali-Americana, Coleoptera, 5:280.

Strangalia brachialis; Linsley and Chemsak, 1971, Arq. Zool., 21:26.

Ophistomis nigrita Linsley, 1935, Trans. Amer. Entomol. Soc., 61:110.

Male: Form elongate, strongly attenuated; color black, front and middle legs often partially yellowish. Antennae with large poriferous areas. Pronotum shining, very sparsely punctate, non pubescent. Legs with hind tibiae carinate. Abdomen with last sternite excavated for its length, sides moderately produced. Length, 14–18 mm.

Female: Form more robust, less attenuated. Abdomen sparsely punctate, last sternite lightly impressed at apex. Length, 13–19 mm.

Type locality: of *brachialis*, Oaxaca, Mexico; *nigrita*, Punta Gorda, British Honduras.

Females often have the pronotum and underside reddish and one specimen has reddish longitudinal vittae on the elytra.

Specimens examined from Mexico and not previously recorded include: 1 ♂, 3 ♀♀, Cordoba, Veracruz, 12 July 1936 (J. S. Buckett, M. R. and R. C. Sears); 1 ♂, Presidio, Veracruz, 1 July 1964 (Lau); 1 ♀, Lago Catemaco, Veracruz, 14 July 1968 (M. Wasbauer, J. Slansky); 1 ♂, Coyame, Lago Catemaco, 1–15 July 1963 (D. R. Whitehead); 3 ♂♂, 1 ♀, X-Can, Quintana Roo, 2–12 July 1967 (E. R. Welling).

Strangalia cavaventra Chemsak

Strangalia cavaventra Chemsak, 1969, Jour. New York Entomol. Soc., 77:8, fig. 7; Linsley and Chemsak, 1971, Arq. Zoo., 21:24.

Male: Form slender, elongate; color black, elytra often with two pale longitudinal vittae. Antennae with small poriferous areas. Legs with hind tibiae strongly carinate internally. Abdomen with last sternite deeply excavated, broadly carinate medially, margins very strongly inflated, clothed internally with long and short erect pubescence. Length, 20–23 mm.

Female: Form similar, elytra strongly cuneiform. Abdomen reddish, apex of last tergite strongly emarginate, apex of last sternite medially impressed. Length, 15–17 mm.

Type locality: 14 miles W Tehuantepec, Oaxaca, Mexico.

Additional material includes 5 males, 1 female, 30 miles NE Tehuantepec, 8 July 1955 (D. Giuliani).

Strangalia dolycopis Chemsak

Strangalia dolycopis Chemsak, 1969, Jour. New York Entomol. Soc., 77:3, fig. 2.

Male: Form slender, elongate, strongly attenuated; color black, antennae with segments 7 or 8 to 10 yellowish, at least beneath, elytra with broad testaceous, longitudinal vittae. Poriferous areas of antennae very small. Pronotum with discal punctures dense, strongly transverse, pubescence fine, sparse. Legs with hind tibiae vaguely carinate internally. Abdomen with last sternite excavated for its entire length, margins moderately strongly produced. Length, 19 mm.

Female: Unknown.

Type locality: Santa Clara, in interior valley of Sierra de las Minas (N. of Cabanas), Zacapa, Guatemala, 6,500 ft.

This species is distinctive by the long, slender face and almost angulate sides of the pronotum.

Additional material: 1 ♂, Ach'lum, Tenejapa, Chiapas, Mexico, 8900 ft., 23–26 July (D. E. Breedlove, J. Emmel).

Strangalia doyenii, n. sp.

Male: Form rather robust, elongate, strongly tapering posteriorly; integument yellow-orange, tips of mandibles and palpi, eyes, neck beneath, antennae except scape above and outer segments, margins of pronotum and margins of thoracic sternites black, elytra with pale brownish humeral stripes terminating into spots which extend to suture as basal one-fifth, two brownish ante-median spots extending from margins and apices brownish. Head with front long, shallowly, separately punctate, pubescence obsolete; vertex finely, confluent punctate, very sparsely pubescent; antennae thickening from sixth segment, shorter than elytra, scape pale dorsally, segments from sixth with distinct apical poriferous areas. Pronotum with sides slightly sinuate, apex narrowly impressed; disk strongly convex with a vague median line; punctures transverse, confluent, finer at sides; pubescence fine, depressed, black on disk, golden at basal margin; prosternum very finely rugulose, sparsely pubescent; meso- and metasternum finely, shallowly, densely punctate, densely clothed with golden depressed pubescence. Elytra more than three times as long as broad, strongly attenuated and dehiscent; punctures fine, contiguous; pubescence moderately dense, subdepressed, black and golden; apices obliquely truncate, not produced. Legs slender, hind femora carinate basally on inside edge; hind tibiae strongly arcuate, strongly carinate internally, inner tibial spurs modified into small flat plates. Abdomen extending almost two segments beyond elytra; first three sternites minutely punctate basally at sides, punctures becoming coarser and sparser toward apex, fourth sternite finely densely punctate and pubescent, impressed over apical one-third, last sternite deeply excavated, sides strongly produced, densely clothed with erect pubescence internally. Length, 20–25 mm.

Female: Form similar, elytra strongly attenuated. Antennae extending to about third abdominal segment, segments to fifth orange, sixth and part of seventh black, remainder yellow, poriferous areas small. Elytra with a broad black band at basal one-fifth which expands along suture to scutellum and joins an antemedian black band, apical half brownish, pale areas between bands yellow. Abdomen with last sternite strongly impressed at apex; last tergite emarginate at apex, angles obtuse. Length, 18–20 mm.

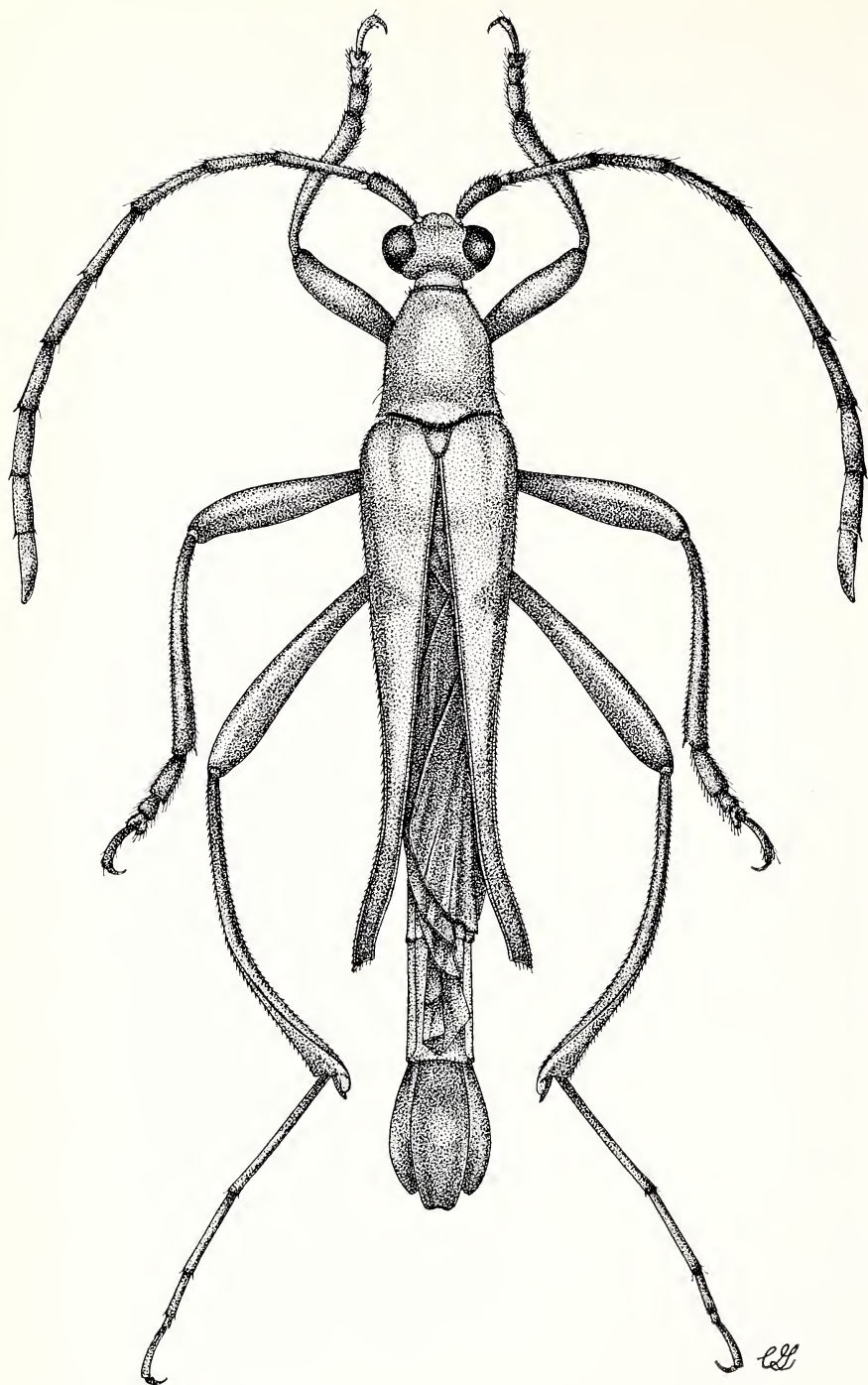


FIG. 1 *Strangalia doyeri* Chemsak and Linsley. ♂

Holotype male, allotype (California Academy of Sciences) and 10 paratypes (8 males, 2 females) from 30 miles NE Tehuantepec, Oaxaca, Mexico, 8 July 1955 (D. Giuliani). Additional paratypes include: 1 male, 8 miles N. La Ventosa, Oaxaca, Mexico, 20 July 1963 (J. Doyen); 1 male, 4 miles E. San Blas, Nayarit, Mexico, 17 July 1963 (J. P. Donohue).

There is little variation in coloration among individuals of the same sex. The females resemble those of *bicolorella* but may be separated by the dull, pubescent pronotal disk and more finely punctate elytra.

We are pleased to dedicate this species to John T. Doyen who first brought it to our attention.

Strangalia emaciata (Bates)

Ophistomis emaciata Bates, 1880, Biologia Centrali-Americana, Coleoptera, 5:39.

Strangalia emaciata; Linsley and Chemsak, 1971 Arq. Zool., 21:27.

Female: Form slender, elytra attenuated; color yellowish, most of head and pronotum, antennae except segments 6 to 10, parts of legs and underside black, elytra yellow except scuteller area, a diamond shaped sutural spot behind scutellum which narrows and extends down suture to apex, past humeral spots and triangular antemedian spots not attaining suture. Pronotum very sparsely punctate, non pubescent. Abdomen subglabrous; last sternite impressed at apex, angles dentate; last tergite rounded at apex. Length, 14 mm.

Male: Unknown

Type locality: Costa Rica

This species, known only from the type, is distinguished by the very sparsely punctate pronotum and the shapes of the last abdominal tergite and sternite.

Strangalia gracilis Chemsak

Strangalia gracilis Chemsak, 1969, Jour. New York Entomol. Soc., 77:7, fig. 6; Linsley and Chemsak, 1971, Arq. Zool., 21:24.

Male: Form very slender, strongly tapering; color black with brownish elytra which are narrowly black along the lateral and sutural margins, each side with a small black spot at middle near lateral black line. Antennae with very small poriferous areas. Legs with posterior tibiae lacking carinae. Abdomen with last sternite excavated for its entire length, margins moderately strongly expanded, excavation almost glabrous. Length, 16–18 mm.

Female: Form less attenuated. Antennae with last four segments yellow. Legs pale. Abdomen reddish; last abdominal sternite apically impressed at middle. Length, 12 mm.

Type locality: 15 miles W El Palmito, 5,000 feet, Sinaloa, Mexico. Only the type series, collected in July, has been seen.

Strangalia lachrymans (Bates)

Ophistomis lachrymans Bates, 1885, Biologia Centrali-Americana, Coleoptera, 5:280, pl. 20, fig. 4.

Strangalia lachrymans; Linsley and Chemsak, 1971, Arq. Zool., 21:28.

Male: Form large, strongly attenuated, color black, elytra with two short yellowish longitudinal vittae. Antennae with poriferous areas, segments from seventh with a double set

of two poriferous spots. Pronotum densely, confluent punctate, punctures transverse; pubescence sparse, short, erect. Legs with hind tibiae not carinate. Abdomen with last sternite excavated for its length, sides strongly expanded. Length, 22 mm.

Female: Unknown

Type locality: Purula, Vera Paz, Guatemala

Although this species is known only from the type, the color pattern probably varies from all black to black with well developed pale vittae on the elytra.

The robust size, nature of the punctures and pubescence of the pronotum, rather sparsely punctate elytra, and strongly expanded apex of the abdomen should make *lachrymans* readily recognizable.

Strangalia melampus (Bates)

Ophistomis melampus Bates, 1885, *Biologia Centrali-Americana*, Coleoptera, 5:280.

Strangalia melampus; Linsley and Chemsak, 1971, *Arq. Zool.*, 21:29.

Ophistomis histrio Bates, 1885, *Biologia Centrali-Americana*, Coleoptera, 5:281, pl. 20, fig. 3; Chemsak, 1964, *Jour. Kansas Entomol. Soc.*, 40:78. New synonymy.

Strangalia histrio; Linsley and Chemsak, 1971, *Arq. Zool.*, 21:27.

Male: Form moderate-sized, slender, strongly attenuated; color black, antennal segments from sixth usually yellow, legs often partially pale, elytra may have pale spots. Antennae with small poriferous areas. Pronotum densely, transversely punctate except for median glabrous line; pubescence fine, sparse. Legs with hind tibiae carinate at apex. Abdomen with last sternite excavated for its length, sides moderately strongly produced. Length, 16–17 mm.

Female: Form moderately robust; color yellowish, parts of head, antennal segments one to six, margins and two oblique discal stripes of pronotum black, elytra with dark markings as follows: a median semicircular band behind scutellum, an arcuate W-shaped stripe extending obliquely on each sides from humeri, angling sharply, arcuately toward base and ending in a round spot near suture, each side with an oblique V-shaped stripe at middle which extends to suture, a post median oblique line angling toward base at suture and two small spots before apex, the areas contained within the black lines are paler yellow. Abdomen with last sternite feebly impressed at apex. Length, 15–17 mm.

Type locality: of *melampus*, San Geronimo, Guatemala; *histrio*, Cerro Zunil, Guatemala.

The sexual dichromatism in this species is as extreme as that in *S. bicolorella*.

Previously unrecorded specimens include a mating pair from 2 Km N Santa Maria, near tunnel, Quetz., Guatemala, 24 October 1965, (J. M. Campbell).

Strangalia montivaga, n. sp.

Female: Form moderate sized, strongly tapering posteriorly; integument black, abdomen reddish, elytra with two narrow, longitudinal, yellowish vittae. Head with front short, frons densely, shallowly punctate, sparsely pubescent; vertex deeply, contiguously punctate, very thinly pubescent; antennae extending to about third abdominal segment, segments from sixth opaque, slightly thickened, poriferous areas vague. Pronotum about as long as basal width, sides slightly sinuate; apex narrowly impressed; disk convex, glabrous median line short, narrow; punctures moderately coarse, subconfluent, ovoid, becoming finer and denser toward sides; pubescence short, depressed, pale basally; prosternum minutely, densely punctate

before coxae, subglabrous toward apex, meso- and metasternum finely, densely punctate, densely clothed with depressed pale pubescence. Elytra about three times as long as broad, sides narrowing before middle; punctures rather fine, subcontiguous; pubescence moderate, short, depressed, mostly dark; apices obliquely truncate. Legs slender; hind femora carinate above at base; hind tibiae not carinate. Abdomen with sternites minutely punctate at bases, punctures becoming larger and very sparse to apical margins; last sternite impressed at middle; last tergite shallowly notched at middle. Length, 13–18 mm.

Holotype: Female (Canadian National Collection) from 24 miles W La Ciudad, Durango, Mexico, 7000 ft., 2 July 1964 (W. R. M. Mason). One female paratype from 15 miles W El Palmito, Sinaloa, Mexico, 29 July 1964 (H. F. Howden).

This species greatly resembles the females of *S. cavaventra*, but in addition to the broader pronotum, it differs by having the apex of the last abdominal tergite shallowly notched with the apices not produced into obtuse spines.

Strangalia opleri, n. sp.

Male: Form moderate sized, strongly tapering posteriorly; integument yellowish, head, antennae, most of pronotum, tibiae and tarsi, apices of hind femora, and parts of underside black, elytra narrowly black down suture and margins, more broadly along margins at apical one-half. Head with front only moderately long, rather finely, densely punctate, sparsely pubescent; vertex very finely and densely punctate with a few larger punctures interspersed, densely clothed with fine, golden, recumbent pubescence; antennae shorter than elytra, slightly expanded from apex of sixth segment, segments from seventh opaque, with poriferous areas, basal segments sparsely clothed with depressed black setae. Pronotum elongate, sides slightly sinuate; apex shallowly impressed; disk convex, densely transversely, confluent punctate, punctures at sides deeper, rounded; pubescence dense, golden, appressed, lying transversely at middle; prosternum finely rugulose, moderately densely pubescent; meso- and metasternum finely densely punctate, densely clothed with pale appressed pubescence; metasternum with an elevated tubercle on each side of middle before hind coxae. Elytra almost three times as long as broad, sides strongly narrowing before middle; basal punctures fine, shallow, separated; pubescence pale, moderately dense, depressed, lying obliquely away from suture; apices oblique, shallowly emarginate. Legs robust; front tibiae modified internally, carinate along basal one-half, then forming a concave impression at apex which terminates in a small obtuse spine on each side; hind tibiae with an apical broad plate forming a glabrous concavity to a subapical tubercle. Abdomen extending about two segments beyond elytra; sternites minutely, densely punctate at sides, punctures becoming larger and sparse toward apex, impression very small, sides not produced. Length, 17–19 mm.

Females: Form similar, elytra less attenuated. Antennae extending to about second abdominal segment, outer segments with minute poriferous spots. Legs with tibiae not modified. Abdomen finely, separately punctate; last sternite shallowly impressed at apex; last tergite broadly rounded at apex. Length, 15–18 mm.

Holotype male, allotype (California Academy of Sciences) from Comelco, 8 km. NW Bagaces, Guanacaste Prov., Costa Rica, 25 May 1972, on *Piper pseudofuliginum* (P. A. Opler). Paratypes as follow: 1♂, 1♀. La Pacifica, 4 km NW Cañas, Guanacaste, Costa Rica, 30 May 1972, 2–4 June 1973, on asclepiad vine (Opler); 10♂♂, 2♀♀, Hacienda Comelco, 24 km NW Cañas, Inter-Am. Hwy, Guanacaste, Costa Rica, 14 to 20 May 1971 on flowers of *Piper* and *Allophyllus occidentalis* (E. R. Heithaus).

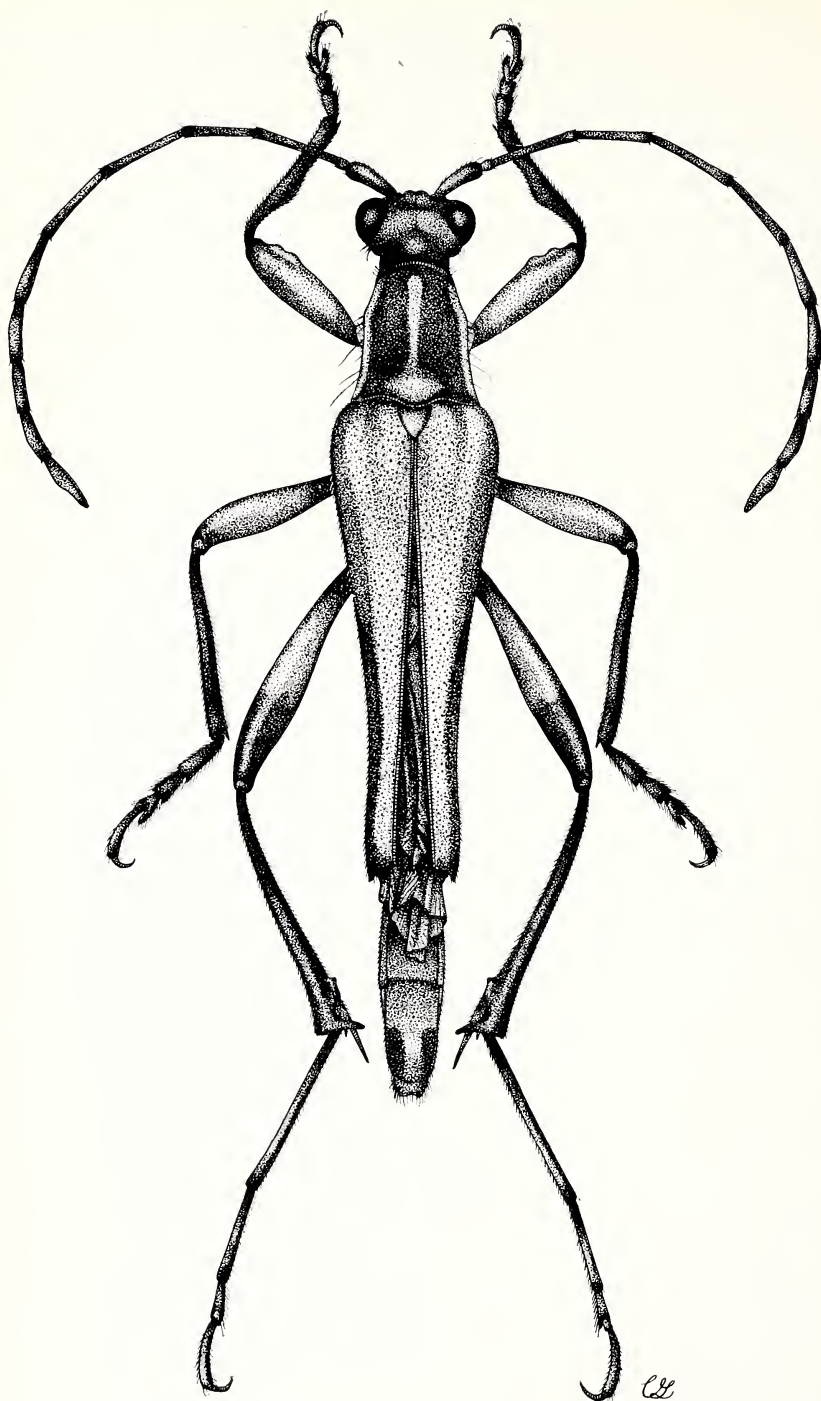


FIG. 2 *Strangalia opleri* Chemsak and Linsley. ♂

This very distinctive species may be recognized by the yellow and black coloration, the transverse, golden, appressed pubescence, and the secondary sexual characters of the males. Variation is expressed in the amount of black on the pronotum and elytra. Occasionally the elytra are wholly reddish brown.

This species is dedicated to P. A. Opler for his cerambycid collecting efforts over the years.

Strangalia palaspina Chemsak

Strangalia palaspina Chemsak, 1969, Jour. New York Entomol. Soc., 77:3, fig. 3; Linsley and Chemsak, 1971, Arq. Zool., 21:24.

Male: Form moderately slender; color orange with antennae, often apices of elytra, parts of underside and often parts of middle and hind legs black. Antennae with poriferous areas distinct. Hind tibiae with inside spur greatly expanded into a broad excavated plate. Abdomen with last sternite slightly depressed at middle of apex, margins not produced. Length, 15–18 mm.

Female: Form more robust, elytra not attenuated. Abdomen with last sternite short, medially depressed at margin. Length, 13–16 mm.

Type locality: 5 miles N Mazatlan, Sinaloa, Mexico.

The females vary in color with the elytra often having longitudinal black vittae down the margins and suture.

In addition to the type series, 6 males have been examined from the type locality, 22–31 July 1972, taken on flowers of *Buddleia wrightii* (J. and M. A. Chemsak) and 29 July 1973 (Chemsak, Linsleys and Michelbachers).

Strangalia pectoralis (Bates)

Ophistomis pectoralis Bates, 1885, Biologia Centrali-Americana, Coleoptera, 5:282; Chemsak, 1964, Jour. Kansas Entomol. Soc., 40:78.

Strangalia pectoralis; Linsley and Chemsak, 1971, Arq. Zool., 21:30.

Male: Form slender, rather small, elytra attenuated; color yellowish except for part of head, pronotum, antennae, parts of legs and parts of underside, pronotum and underside partly reddish, elytra with black spots joined at margins. Antennae with distinct poriferous areas. Pronotum finely, densely punctate, finely, densely golden pubescent. Legs with hind tibiae non carinate. Abdomen with last sternite excavated for about $\frac{2}{3}$ its length, sides slightly produced, angles dentate. Length, 10–13 mm.

Female: Form more robust. Abdomen with last sternite medially impressed at apex. Length, 10–13 mm.

Type locality: Cordoba, Veracruz, Mexico.

The densely punctate and pubescent pronotum will distinguish this species from *S. felix* and *S. saltator*.

Previously unrecorded material examined: 1 ♀, Cordoba, Veracruz (A. Fenyes); 3 ♂ ♂, Juquila Mixes, 4700', Oaxaca, Mexico, 2–7 May 1968 (W. S. Miller).

Strangalia picticornis (Bates)

Ophistomis picticornis Bates, 1869, Trans. Entomol. Soc. London, 1869:384.

Strangalia picticornis; Linsley and Chemsak, 1971, Arq. Zool., 21:30.

Ophistomis felix Bates, 1885, Biologia Centrali-Americana, Coleoptera, 5:282, pl. 20, fig. 5.

Male: Form narrow, strongly attenuated; color yellowish, parts of head, two pronotal stripes, antennae, parts of legs black, elytra with two black median basal spots, usually two subbasal spots near margins, a median pair not extending to suture, and a post median pair, apices and margins also narrowly black. Antennae with large, elongate poriferous areas. Pronotum sparsely, transversely punctate, subglabrous. Legs with hind tibiae vaguely carinated at apices. Abdomen with last sternite excavated for most of its length, sides moderately produced, apices dentate. Length, 16–17.5 mm.

Female: Form more robust. Antennae yellow from segment seven. Abdomen with last sternite slender, deeply impressed medially at apex. Length, 15–20 mm.

Type locality: of *picticornis*, Chontales, Nicaragua; *felix*, San Feliz, Panama.

This species is very similar to *S. saltator*, but the slightly more expanded and less acute sides of the last abdominal sternite and deeply V-shaped apex of the last tergite will distinguish the males of *picticornis*. Females of *picticornis* differ in the yellow apices of the antennae and deeply emarginate, dentate last abdominal tergite. Individuals of *saltator* also tend to be smaller than those of *picticornis*.

No previously unrecorded specimens have been seen.

Strangalia sallaei (Bates)

Ophistomis sallaei Bates, 1885, Biologia Centrali-Americana, Coleoptera, 5:280.

Strangalia sallaei; Linsley and Chemsak, 1971, Arq. Zool., 21:32.

Female: Form moderately robust, elytra attenuated; color pale orange-yellow, parts of head, antennae except segments 8 to 10, two pronotal stripes and parts of legs and underside black, elytra with a broad arcuate brownish humeral band on each side, two black spots at middle and a broad dark longitudinal band postmedially to apex, suture narrowly dark. Pronotum with disk densely, confluent punctate, densely pubescent, abdomen glabrous, apex of last sternite medially impressed, angles not produced; apex of last tergite emarginate. Length, 18 mm.

Male: Unknown.

Type locality: Mexico

The coloration is similar to that of *S. picticornis* but the densely punctate and pubescent pronotum will readily separate *sallaei*.

This species is known only from the type.

Strangalia saltator (Bates)

Ophistomis saltator Bates, 1885, Biologia Centrali-Americana, Coleoptera, 5:281, pl. 20, fig. 6; Chemsak, 1964, Jour. Kansas Entomol. Soc., 40:78.

Strangalia saltator; Linsley and Chemsak, 1971, Arq. Zool., 12:31.

Male: Form slender, strongly attenuated; color yellowish, parts of head, antennae, two discal pronotal stripes, parts of legs and parts of underside black, elytra with two median black spots extending from margins but not to suture, a post median black band, and apices black. Antennae with large, elongate poriferous areas. Pronotum sparsely, transversely punctate, pubescence sparse. Legs with hind tibiae vaguely carinate. Abdomen with last

sternite excavated for most of its length, sides moderately produced, angles strongly dentate; last tergite emarginate at apex, not dentate. Length, 14–16 mm.

Female: Form less attenuated. Abdomen with last sternite impressed medially, angles acute; last tergite sinuate emarginate at apex, not acutely produced. Length, 14 mm.

Type locality: San Feliz, Panama

The shape of the last abdominal sternite and tergite and all black antennae of females distinguish this species from *S. picticornis*.

We have seen no specimens other than the type series.

Strangalia westcotti, n. sp.

Male: Form slender, elongate, elytra strongly attenuated; integument, reddish orange, eyes, spot on neck beneath, margins of pronotum narrowly, antennal segments six, seven and part of five, front and tarsi dorsally, part of hind tibiae, and margins of some sternites black, elytra black except for two vaguely pale circumscutellar spots, two yellow antemedian and two yellow median spots, segments 8 to 11 of antennae yellow. Head with front rather short, vaguely, finely punctate, glabrous; vertex finely, confluent punctate, very sparsely pubescent; antennae about as long as elytra, slightly thickening from sixth segment; small poriferous pits present from seventh segment. Pronotum with sides slightly sinuate, apex impressed; disk strongly convex; punctures dense, transverse, confluent; pubescence very short, black, depressed; prosternum glabrous, rugulose; meso- and metasternum minutely, densely punctate, moderately densely pubescent; metasternum with two small, vague tubercles toward apex. Elytra more than three times as long as broad, strongly narrowing before middle; punctures fine, separated; pubescence short, dark, depressed; apices obliquely, shallowly emarginate. Legs slender; hind tibiae slightly arcuate, vaguely carinate at apices. Abdomen extending about two segments beyond elytra; sternites finely, densely punctate at sides, minutely pubescent; last sternite shallowly impressed for 4/5 its length, sides moderately produced at apex. Length, 19 mm.

Holotype male: (California Academy of Sciences) from 20 miles SE Ixtlan del Rio, Nayarit, Mexico, 22 July 1963 (R. L. Westcott).

This species somewhat resembles *S. bicolorella* in appearance and coloration, but may be separated by the tri-colored antennae, more finely punctured and more strongly attenuated elytra, much shorter palpi, and less strongly excavated last abdominal sternite.

We are pleased to name this species for R. L. Westcott who has made his collection available for study.

Strangalia xanthotelas (Bates)

Ophistomis xanthotelas Bates, 1892, Trans. Entomol. Soc. London, 1892: 158, pl. 6, fig. 4; Chemsak, 1964, Jour. Kansas Entomol. Soc., 40:75.

Strangalia xanthotelas; Linsley and Chemsak, 1971, Arq. Zool., 21:33.

Male: Form slender, strongly attenuated; color black, antennae with segments from apex of eighth yellow. Antennae lacking poriferous areas. Pronotum shallowly, rather sparsely punctate. Legs with hind tibiae strongly carinate internally. Abdomen with last sternite deeply excavated over entire length, sides moderately produced, apical angles dentate. Length, 14–16 mm.

Female: Elytra less strongly attenuated. Abdomen with apex of last sternite moderately impressed; last tergite deeply emarginate at apex. Length, 12 mm.

Type locality: Acaquizotla, Guerrero, Mexico

This species is known at present only from the type series.

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BOOK REVIEW

A Field Guide to the Butterflies of the West Indies. Demeter Press; Quadrangle. The N. Y. Times Book Co. (Distributed by Harper & Row). 224 pp. 24 color plates. \$12.50. 1976.

This handy volume presents a comprehensive guide to the identification of 292 butterflies throughout the Caribbean area, from southern Florida to Barbados and Trinidad. Actually Trinidad, Aruba, Curacao and Bonaire are not included as this would have more than doubled the number of species listed. The text includes a description of almost all but the rarest species, with notes on size, color, habitat, and where available, developmental stages. A handy distribution table and checklist is included, as well as a concise index of scientific names, common English names, and a short bibliography. Although data on the biology of many tropical butterflies is lacking, the author provided what has been published. The book includes an introduction dealing with the anatomy and life history of butterflies, as well as seasonal variations and geographic variation. A useful glossary of terms is also provided. The book fills a need for a single inexpensive description of all butterflies of the West Indies. It will be welcomed by the amateur as well as the serious professional entomologist.

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